# Map Unit Description

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions in this report, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. All the soils of a series have major horizons that are similar in composition, thickness, and arrangement. Soils of a given series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Additional information about the map units described in this report is available in other soil reports, which give properties of the soils and the limitations, capabilities, and potentials for many uses. Also, the narratives that accompany the soil reports define some of the properties included in the map unit descriptions.

# Report—Map Unit Description

# Custer and Pennington Counties Area, Black Hills Parts, South Dakota

## Q0206B—Cordeston-Marshbrook loams, 0 to 6 percent slopes, flooded

### Map Unit Setting

*National map unit symbol:* 2kr3j
*Elevation:* 3,900 to 6,200 feet
*Mean annual precipitation:* 22 to 31 inches
*Mean annual air temperature:* 37 to 45 degrees F

*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Cordeston, rarely flooded, and similar soils:* 50 percent
*Marshbrook and similar soils:* 30 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Cordeston, Rarely Flooded**

**Setting**

*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from metamorphic and sedimentary rock

**Typical profile**

*A - 0 to 8 inches:* loam
*Bw1 - 8 to 26 inches:* loam
*Bw2 - 26 to 40 inches:* loam
*C - 40 to 60 inches:* loam

**Properties and qualities**

*Slope:* 0 to 6 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

### Description of Marshbrook

#### Setting

*Landform:* Flood plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Alluvium

#### Typical profile

*A - 0 to 25 inches:* loam
*Bg - 25 to 41 inches:* loam
*Cg1 - 41 to 50 inches:* gravelly loam
*Cg2 - 50 to 60 inches:* gravelly sandy loam

#### Properties and qualities

*Slope:* 0 to 6 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* About 0 to 12 inches
*Frequency of flooding:* Occasional
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 10 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 5w
*Hydrologic Soil Group:* B/D
*Ecological site:* Subirrigated (R062XY003SD)
*Other vegetative classification:* Wet (G062XY900SD)
*Hydric soil rating:* Yes

### Minor Components

#### Pactola

*Percent of map unit:* 5 percent
*Landform:* Valleys
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Maitland**

*Percent of map unit:* 5 percent
*Landform:* Valley sides, valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Hilger, moist**

*Percent of map unit:* 5 percent
*Landform:* Terraces, hills
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Interfluve, side slope
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Stony Hills (R062XY029SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Bullflat**

*Percent of map unit:* 5 percent
*Landform:* Valleys
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* Loamy (North) 22-30 Inch PZ (R062XA010SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Q0209D—Heely-Cordeston complex, 2 to 15 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2kr2j
*Elevation:* 3,800 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Heely and similar soils:* 55 percent
*Cordeston and similar soils:* 30 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

## Description of Heely

### Setting

*Landform:* Hills
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist

### Typical profile

*A - 0 to 6 inches:* channery loam
*Bw1 - 6 to 10 inches:* very flaggy loam
*Bw2 - 10 to 17 inches:* very flaggy sandy loam
*BC - 17 to 22 inches:* very flaggy sandy loam
*C - 22 to 27 inches:* extremely flaggy sandy loam
*R - 27 to 60 inches:* unweathered bedrock

### Properties and qualities

*Slope:* 6 to 15 percent
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.02 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 3.2 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* C
*Ecological site:* Channery Loam (North) (R062XA032SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Cordeston

### Setting

*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from metamorphic and sedimentary rock

**Typical profile**

*A - 0 to 8 inches:* loam
*Bw1 - 8 to 26 inches:* loam
*Bw2 - 26 to 40 inches:* loam
*C - 40 to 60 inches:* loam

**Properties and qualities**

*Slope:* 2 to 10 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* B
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Minor Components**

**Buska**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Pactola**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rock outcrop, schist**

*Percent of map unit:* 5 percent
*Landform:* Hills
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, free face
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

# Lawrence County, South Dakota

## Q0206B—Cordeston-Marshbrook loams, 0 to 6 percent slopes, flooded

**Map Unit Setting**

*National map unit symbol:* 2kr3j
*Elevation:* 3,900 to 6,200 feet
*Mean annual precipitation:* 22 to 31 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Cordeston, rarely flooded, and similar soils:* 50 percent
*Marshbrook and similar soils:* 30 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Cordeston, Rarely Flooded**

**Setting**

*Landform:* Valleys, terraces
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from metamorphic and sedimentary rock

**Typical profile**

*A - 0 to 8 inches:* loam
*Bw1 - 8 to 26 inches:* loam
*Bw2 - 26 to 40 inches:* loam
*C - 40 to 60 inches:* loam

**Properties and qualities**

*Slope:* 0 to 6 percent
*Depth to restrictive feature:* More than 80 inches

*Natural drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Description of Marshbrook

**Setting**

*Landform:* Flood plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 25 inches:* loam
*Bg - 25 to 41 inches:* loam
*Cg1 - 41 to 50 inches:* gravelly loam
*Cg2 - 50 to 60 inches:* gravelly sandy loam

**Properties and qualities**

*Slope:* 0 to 6 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* About 0 to 12 inches
*Frequency of flooding:* Occasional
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 10 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 5w
*Hydrologic Soil Group:* B/D
*Ecological site:* Subirrigated (R062XY003SD)
*Other vegetative classification:* Wet (G062XY900SD)
*Hydric soil rating:* Yes

**Minor Components**

**Pactola**

*Percent of map unit:* 5 percent
*Landform:* Valleys
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Maitland**

*Percent of map unit:* 5 percent
*Landform:* Valley sides, valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Hilger, moist**

*Percent of map unit:* 5 percent
*Landform:* Terraces, hills
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Interfluve, side slope
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Stony Hills (R062XY029SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Bullflat**

*Percent of map unit:* 5 percent
*Landform:* Valleys
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* Loamy (North) 22-30 Inch PZ (R062XA010SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Q0209D—Heely-Cordeston complex, 2 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr2j
*Elevation:* 3,800 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Heely and similar soils:* 55 percent
*Cordeston and similar soils:* 30 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Heely

#### Setting

*Landform:* Hills
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Side slope
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist

#### Typical profile

*A - 0 to 6 inches:* channery loam
*Bw1 - 6 to 10 inches:* very flaggy loam
*Bw2 - 10 to 17 inches:* very flaggy sandy loam
*BC - 17 to 22 inches:* very flaggy sandy loam
*C - 22 to 27 inches:* extremely flaggy sandy loam
*R - 27 to 60 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 6 to 15 percent
*Depth to restrictive feature:* 20 to 40 inches to lithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.02 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 3.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* C
*Ecological site:* Channery Loam (North) (R062XA032SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Cordeston

**Setting**

*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from metamorphic and sedimentary rock

**Typical profile**

*A - 0 to 8 inches:* loam
*Bw1 - 8 to 26 inches:* loam
*Bw2 - 26 to 40 inches:* loam
*C - 40 to 60 inches:* loam

**Properties and qualities**

*Slope:* 2 to 10 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* B
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Minor Components

**Buska**

*Percent of map unit:* 5 percent

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Pactola**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rock outcrop, schist**

*Percent of map unit:* 5 percent
*Landform:* Hills
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, free face
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0216B—Marshbrook loam, 0 to 4 percent slopes, occasionally flooded

### Map Unit Setting

*National map unit symbol:* 2kr2y
*Elevation:* 3,600 to 6,200 feet
*Mean annual precipitation:* 18 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 130 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Marshbrook, occasionally flooded, and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Marshbrook, Occasionally Flooded

#### Setting

*Landform:* Flood plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread

*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Parent material:* Alluvium

**Typical profile**

*A - 0 to 25 inches:* loam
*Bg - 25 to 41 inches:* loam
*Cg1 - 41 to 50 inches:* gravelly loam
*Cg2 - 50 to 60 inches:* gravelly sandy loam

**Properties and qualities**

*Slope:* 0 to 4 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Poorly drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* About 0 to 12 inches
*Frequency of flooding:* Occasional
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 10 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 5w
*Hydrologic Soil Group:* B/D
*Ecological site:* Subirrigated (R062XY003SD)
*Other vegetative classification:* Wet (G062XY900SD)
*Hydric soil rating:* Yes

## Minor Components

**Hilger, moist**

*Percent of map unit:* 4 percent
*Landform:* Hills, terraces
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Interfluve, side slope
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Stony Hills (R062XY029SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Cordeston, rarely flooded**

*Percent of map unit:* 4 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear

*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Pactola**

*Percent of map unit:* 4 percent
*Landform:* Mountain valleys
*Landform position (two-dimensional):* Shoulder, backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Virkula**

*Percent of map unit:* 3 percent
*Landform:* Mountain valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Q0225D—Pactola-Virkula complex, 2 to 15 percent slopes, extremely bouldery

### Map Unit Setting

*National map unit symbol:* 2kr36
*Elevation:* 3,800 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Pactola, bouldery, and similar soils:* 50 percent
*Virkula, bouldery, and similar soils:* 30 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pactola, Bouldery

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist and/or other metamorphic rock

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* channery loam
*E - 3 to 10 inches:* very channery silt loam
*Bt/E - 10 to 23 inches:* very channery clay loam
*Bt - 23 to 42 inches:* extremely flaggy clay loam
*C - 42 to 60 inches:* extremely flaggy silt loam

**Properties and qualities**

*Slope:* 6 to 15 percent
*Percent of area covered with surface fragments:* 5.5 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 5.6 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Virkula, Bouldery

**Setting**

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear, concave
*Parent material:* Colluvium and/or residuum weathered from schist and/or other metamorphic rock

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 4 inches:* silt loam
*E - 4 to 15 inches:* silt loam
*Bt/E - 15 to 22 inches:* silt loam
*Bt1 - 22 to 41 inches:* clay loam
*Bt2 - 41 to 66 inches:* clay loam
*Bk - 66 to 80 inches:* channery silty clay loam

**Properties and qualities**

*Slope:* 2 to 15 percent
*Percent of area covered with surface fragments:* 5.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 5 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* C
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Minor Components**

**Cordeston**

*Percent of map unit:* 5 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Rock outcrop, schist**

*Percent of map unit:* 5 percent
*Landform:* Mountains
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, free face
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Grizzly**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear

*Across-slope shape:* Linear, convex
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Heely**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Lower third of mountainflank
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Channery Loam (North) (R062XA032SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0226E—Pactola-Virkula-Rock outcrop complex, 10 to 40 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr37
*Elevation:* 3,590 to 6,200 feet
*Mean annual precipitation:* 20 to 32 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Pactola and similar soils:* 50 percent
*Virkula and similar soils:* 20 percent
*Rock outcrop, schist:* 15 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pactola

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist and/or other metamorphic rock

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* loam
*E - 3 to 10 inches:* very channery silt loam
*Bt/E - 10 to 23 inches:* very channery clay loam
*Bt - 23 to 42 inches:* extremely flaggy clay loam
*C - 42 to 60 inches:* extremely flaggy silt loam

**Properties and qualities**

*Slope:* 10 to 40 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 5.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Description of Virkula**

**Setting**

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from schist and/or other metamorphic rock

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 4 inches:* silt loam
*E - 4 to 15 inches:* silt loam
*Bt/E - 15 to 22 inches:* silt loam
*Bt1 - 22 to 41 inches:* clay loam
*Bt2 - 41 to 66 inches:* clay loam
*Bk - 66 to 80 inches:* channery silty clay loam

**Properties and qualities**

*Slope:* 10 to 35 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 5 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Rock Outcrop, Schist

**Setting**

*Landform:* Mountainsides
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, free face
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Parent material:* Schist

**Typical profile**

*R - 0 to 80 inches:* unweathered bedrock

**Properties and qualities**

*Slope:* 10 to 200 percent
*Depth to restrictive feature:* 0 to 1 inches to lithic bedrock
*Natural drainage class:* Excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.21 in/hr)
*Salinity, maximum in profile:* Nonsaline (0.0 to 0.2 mmhos/cm)
*Available water storage in profile:* Very low (about 0.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* D
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Minor Components

**Heely**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Ecological site:* Channery Loam (North) (R062XA032SD)
*Other vegetative classification:* Not suited (G062XY000SD)

*Hydric soil rating:* No

**Buska**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Cordeston, rarely flooded**

*Percent of map unit:* 4 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Grizzly**

*Percent of map unit:* 1 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear
*Across-slope shape:* Linear, convex
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0227E—Pactola-Virkula-Rock outcrop complex, 10 to 40 percent slopes, extremely bouldery

### Map Unit Setting

*National map unit symbol:* 2kr39
*Elevation:* 3,800 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Pactola, bouldery, and similar soils:* 50 percent
*Virkula, bouldery, and similar soils:* 20 percent
*Rock outcrop, schist:* 15 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Pactola, Bouldery

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist and/or other metamorphic rock

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* channery loam
*E - 3 to 10 inches:* very channery silt loam
*Bt/E - 10 to 23 inches:* very channery clay loam
*Bt - 23 to 42 inches:* extremely flaggy clay loam
*C - 42 to 60 inches:* extremely flaggy silt loam

#### Properties and qualities

*Slope:* 10 to 40 percent
*Percent of area covered with surface fragments:* 5.5 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 5.6 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Description of Virkula, Bouldery

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from schist and/or other metamorphic rock

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 4 inches:* silt loam
*E - 4 to 15 inches:* silt loam
*Bt/E - 15 to 22 inches:* silt loam
*Bt1 - 22 to 41 inches:* clay loam
*Bt2 - 41 to 66 inches:* clay loam
*Bk - 66 to 80 inches:* channery silty clay loam

**Properties and qualities**

*Slope:* 10 to 25 percent
*Percent of area covered with surface fragments:* 5.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 5 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* C
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Rock Outcrop, Schist

**Setting**

*Landform:* Mountainsides
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex
*Across-slope shape:* Linear, convex
*Parent material:* Schist

**Typical profile**

*R - 0 to 80 inches:* unweathered bedrock

**Properties and qualities**

*Slope:* 10 to 200 percent
*Depth to restrictive feature:* 0 to 1 inches to lithic bedrock
*Natural drainage class:* Excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.21 in/hr)
*Salinity, maximum in profile:* Nonsaline (0.0 to 0.2 mmhos/cm)

*Available water storage in profile:* Very low (about 0.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* D
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Minor Components**

**Heely**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Ecological site:* Channery Loam (North) (R062XA032SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Cordeston, rarely flooded**

*Percent of map unit:* 5 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Grizzly**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, shoulder, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear
*Across-slope shape:* Linear, convex
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0232G—Pactola-Pactola, shallow-Rock outcrop complex, 40 to 80 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2kr34
*Elevation:* 3,800 to 6,200 feet
*Mean annual precipitation:* 22 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days

*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Pactola and similar soils:* 40 percent
*Rock outcrop, schist:* 20 percent
*Pactola, shallow, and similar soils:* 20 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Pactola**

**Setting**

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist and/or other metamorphic rock

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* loam
*E - 3 to 10 inches:* very channery silt loam
*Bt/E - 10 to 23 inches:* very channery clay loam
*Bt - 23 to 42 inches:* extremely flaggy clay loam
*C - 42 to 60 inches:* extremely flaggy silt loam

**Properties and qualities**

*Slope:* 40 to 75 percent
*Percent of area covered with surface fragments:* 0.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 5.7 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Description of Pactola, Shallow

#### Setting

*Landform:* Ridges on mountains, mountain slopes on mountains
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Mountaintop, upper third of mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear, convex
*Parent material:* Very channery silty residuum weathered from schist

#### Typical profile

*Oe - 0 to 0 inches:* moderately decomposed plant material
*A - 0 to 2 inches:* channery loam
*C - 2 to 12 inches:* extremely channery silt loam
*R - 12 to 79 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 40 to 80 percent
*Depth to restrictive feature:* 10 to 20 inches to lithic bedrock
*Natural drainage class:* Somewhat excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.02 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Available water storage in profile:* Very low (about 1.1 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7s
*Hydrologic Soil Group:* D
*Ecological site:* Shallow Loamy (North) 22 - 30 Inch PZ (R062XA024SD)
*Hydric soil rating:* No

### Description of Rock Outcrop, Schist

#### Setting

*Landform:* Mountainsides
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Parent material:* Schist

#### Typical profile

*R - 0 to 80 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 40 to 500 percent
*Depth to restrictive feature:* 0 to 1 inches to lithic bedrock

*Natural drainage class:* Excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.21 in/hr)
*Salinity, maximum in profile:* Nonsaline (0.0 to 0.2 mmhos/cm)
*Available water storage in profile:* Very low (about 0.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* D
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Minor Components

### Virkula

*Percent of map unit:* 4 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Grizzly

*Percent of map unit:* 4 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Rapidcreek, nonacid, rarely flooded

*Percent of map unit:* 4 percent
*Landform:* Flood plains, terraces, stream terraces
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Loamy Overflow (North) (R062XA020SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Rubbleland, schist

*Percent of map unit:* 4 percent
*Landform:* Talus slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear

*Across-slope shape:* Linear
*Ecological site:* Non-site (R062XY999SD)
*Hydric soil rating:* No

**Cordeston**

*Percent of map unit:* 4 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Q0235G—Rubbleland-Pactola-Rock outcrop complex, 40 to 75 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr3b
*Elevation:* 3,940 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Rubbleland, metamorphic:* 40 percent
*Pactola and similar soils:* 25 percent
*Rock outcrop, schist:* 20 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Rubbleland, Metamorphic

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Lower third of mountainflank, center third of mountainflank
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Stoney and bouldery talus derived from metaquartzite and/or schist

#### Typical profile

*C - 0 to 80 inches:* boulders

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* A

*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Description of Pactola

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist and/or other metamorphic rock

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* loam
*E - 3 to 10 inches:* very channery silt loam
*Bt/E - 10 to 23 inches:* very channery clay loam
*Bt - 23 to 42 inches:* extremely flaggy clay loam
*C - 42 to 60 inches:* extremely flaggy silt loam

#### Properties and qualities

*Slope:* 40 to 75 percent
*Percent of area covered with surface fragments:* 0.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 5.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Description of Rock Outcrop, Schist

#### Setting

*Landform:* Mountainsides
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear

*Parent material:* Schist

**Typical profile**

*R - 0 to 80 inches:* bedrock

**Properties and qualities**

*Slope:* 40 to 500 percent
*Depth to restrictive feature:* 0 to 1 inches to lithic bedrock
*Natural drainage class:* Excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Very low to moderately high (0.00 to 0.21 in/hr)
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 0.3 mmhos/cm)
*Available water storage in profile:* Very low (about 0.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* D
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Minor Components**

**Virkula**

*Percent of map unit:* 7 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Buska**

*Percent of map unit:* 6 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Grizzly**

*Percent of map unit:* 2 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)

*Hydric soil rating:* No

## Q0239D—Virkula-Pactola complex, 2 to 15 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr3d
*Elevation:* 3,800 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Virkula and similar soils:* 50 percent
*Pactola and similar soils:* 30 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Virkula

#### Setting

*Landform:* Mountain slopes, mountain valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainbase, lower third of mountainflank
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from schist and/or other metamorphic rock

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 4 inches:* silt loam
*E - 4 to 15 inches:* silt loam
*Bt/E - 15 to 22 inches:* silt loam
*Bt1 - 22 to 41 inches:* clay loam
*Bt2 - 41 to 66 inches:* clay loam
*Bk - 66 to 80 inches:* channery silty clay loam

#### Properties and qualities

*Slope:* 2 to 15 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 5 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)

*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 10.2 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Description of Pactola

### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, backslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from schist and/or other metamorphic rock

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* loam
*E - 3 to 10 inches:* very channery silt loam
*Bt/E - 10 to 23 inches:* very channery clay loam
*Bt - 23 to 42 inches:* extremely flaggy clay loam
*C - 42 to 60 inches:* extremely flaggy silt loam

### Properties and qualities

*Slope:* 6 to 15 percent
*Percent of area covered with surface fragments:* 0.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 5.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Minor Components**

**Cordeston**

*Percent of map unit:* 5 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Heely**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Ecological site:* Channery Loam (North) (R062XA032SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rock outcrop, schist**

*Percent of map unit:* 5 percent
*Landform:* Mountainsides
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Convex
*Across-slope shape:* Convex, linear
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Mocmont, moist**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD), Rocky Sideslopes (062XY040SD)
*Hydric soil rating:* No

## Q0514C—Citadel-Vanocker complex, 2 to 12 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2kr51
*Elevation:* 3,610 to 6,200 feet

*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Citadel and similar soils:* 50 percent
*Vanocker and similar soils:* 30 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

**Description of Citadel**

**Setting**

*Landform:* Mountain slopes, mountain valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Local alluvium and/or colluvium and/or residuum weathered from limestone, sandstone, and shale

**Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material
*A - 2 to 3 inches:* silt loam
*E - 3 to 8 inches:* silt loam
*Bt/E - 8 to 14 inches:* silty clay loam
*Bt1 - 14 to 22 inches:* silty clay
*Bt2 - 22 to 30 inches:* silty clay loam
*Btk - 30 to 35 inches:* clay loam
*Bk - 35 to 80 inches:* silt loam

**Properties and qualities**

*Slope:* 2 to 12 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.02 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 20 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 9.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* C
*Other vegetative classification:* Clayey Subsoil (G062XY210SD)
*Hydric soil rating:* No

### Description of Vanocker

#### Setting

*Landform:* Mountain slopes, mountain valleys
*Landform position (two-dimensional):* Backslope, footslope, shoulder
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from limestone, sandstone, and shale

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*AE - 1 to 3 inches:* loam
*Bt - 3 to 10 inches:* channery sandy clay loam
*Bk1 - 10 to 27 inches:* very channery clay loam
*Bk2 - 27 to 58 inches:* extremely channery loam
*R - 58 to 80 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 2 to 12 percent
*Depth to restrictive feature:* 40 to 80 inches to lithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Low to high (0.00 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 79 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 4.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Minor Components

#### Hickok

*Percent of map unit:* 7 percent

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Concave, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Rockerville, moist**

*Percent of map unit:* 7 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Shallow Loamy (North) 22 - 30 Inch PZ (R062XA024SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rock outcrop, limestone**

*Percent of map unit:* 6 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear, convex
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0518B—Cordeston loam, 1 to 6 percent slopes, flooded

**Map Unit Setting**

*National map unit symbol:* 2mv3f
*Elevation:* 3,900 to 6,200 feet
*Mean annual precipitation:* 21 to 31 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Prime farmland if irrigated

**Map Unit Composition**

*Cordeston and similar soils:* 60 percent
*Cordeston, rarely flooded, and similar soils:* 20 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Cordeston

#### Setting

*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Alluvium derived from metamorphic and sedimentary rock

#### Typical profile

*A - 0 to 8 inches:* loam
*Bw1 - 8 to 26 inches:* loam
*Bw2 - 26 to 40 inches:* loam
*C - 40 to 60 inches:* loam

#### Properties and qualities

*Slope:* 0 to 6 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 11.0 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

### Description of Cordeston, Rarely Flooded

#### Setting

*Landform:* Flood plains, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, dip
*Down-slope shape:* Linear, concave
*Across-slope shape:* Concave, linear
*Parent material:* Alluvium derived from metamorphic and sedimentary rock

**Typical profile**

*A - 0 to 8 inches:* loam
*Bw1 - 8 to 26 inches:* loam
*Bw2 - 26 to 40 inches:* loam
*C - 40 to 60 inches:* loam

**Properties and qualities**

*Slope:* 0 to 3 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Low
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.57 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* Rare
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 11.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 3e
*Hydrologic Soil Group:* B
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Minor Components

**Hickok**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes, mountain valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Other vegetative classification:* Loam (G062XY100SD), Ponderosa-Idaho fescue (null_4)
*Hydric soil rating:* No

**Maitland, silt loam**

*Percent of map unit:* 5 percent
*Landform:* Valley sides, valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Loam (G062XY100SD)

*Hydric soil rating:* No

**Marshbrook**

*Percent of map unit:* 5 percent
*Landform:* Flood plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Ecological site:* Subirrigated (R062XY003SD)
*Other vegetative classification:* Wet (G062XY900SD)
*Hydric soil rating:* Yes

**Bullflat**

*Percent of map unit:* 3 percent
*Landform:* Valleys
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* Loamy (North) 22-30 Inch PZ (R062XA010SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Pactola**

*Percent of map unit:* 2 percent
*Landform:* Mountain slopes, mountain valleys
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Convex, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0535C—Bullflat silt loam, moist, 2 to 10 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2kr5m
*Elevation:* 4,000 to 5,770 feet
*Mean annual precipitation:* 22 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Bullflat, wooded, and similar soils:* 85 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Bullflat, Wooded

#### Setting

*Landform:* Valley sides, valleys
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Slope alluvium derived from limestone and sandstone

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 12 inches:* silt loam
*E - 12 to 15 inches:* silt loam
*Bt1 - 15 to 20 inches:* silt loam
*Bt2 - 20 to 39 inches:* silty clay loam
*Bk - 39 to 52 inches:* silt loam
*C - 52 to 60 inches:* loam

#### Properties and qualities

*Slope:* 2 to 10 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.06 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 12 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.4
*Available water storage in profile:* High (about 11.4 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* C
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

### Minor Components

#### Hickok

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Concave, linear
*Across-slope shape:* Linear

*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Marshbrook**

*Percent of map unit:* 5 percent
*Landform:* Flood plains
*Landform position (two-dimensional):* Toeslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Concave
*Across-slope shape:* Linear
*Ecological site:* Subirrigated (R062XY003SD)
*Other vegetative classification:* Wet (G062XY900SD)
*Hydric soil rating:* Yes

**Bullflat**

*Percent of map unit:* 5 percent
*Landform:* Valleys
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Mountainbase, base slope
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* Loamy (North) 22-30 Inch PZ (R062XA010SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Q0564C—Hickok-Rockoa, moist complex, 3 to 12 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr6h
*Elevation:* 4,000 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Rockoa, moist, and similar soils:* 40 percent
*Hickok and similar soils:* 40 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Hickok

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainbase, mountainflank
*Down-slope shape:* Linear
*Across-slope shape:* Linear

*Parent material:* Residuum weathered from sandstone

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* loam
*E - 3 to 11 inches:* very fine sandy loam
*Bt/E - 11 to 14 inches:* loam
*Bt - 14 to 28 inches:* clay loam
*C - 28 to 60 inches:* loam

**Properties and qualities**

*Slope:* 3 to 12 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 10 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.4
*Available water storage in profile:* High (about 10.8 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 4e
*Hydrologic Soil Group:* C
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

## Description of Rockoa, Moist

**Setting**

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from sandstone

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 2 inches:* gravelly fine sandy loam
*E - 2 to 10 inches:* gravelly fine sandy loam
*Bt/E - 10 to 16 inches:* very gravelly clay loam
*Bt - 16 to 30 inches:* very gravelly clay loam
*BC - 30 to 40 inches:* extremely gravelly sandy clay loam
*C - 40 to 60 inches:* extremely gravelly sandy loam

**Properties and qualities**

*Slope:* 3 to 12 percent

*Percent of area covered with surface fragments:* 0.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Medium
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.5
*Available water storage in profile:* Low (about 4.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 6e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Minor Components

### Vanocker

*Percent of map unit:* 7 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank, mountainbase
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Danjay

*Percent of map unit:* 7 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Sandy (North) (R062XA009SD)
*Other vegetative classification:* Not suited (G062XY000SD), Warm Slopes (062XY044SD)
*Hydric soil rating:* No

### Rock outcrop, sandstone

*Percent of map unit:* 6 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, shoulder
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex, linear

*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0565E—Rockoa, moist-Hickok-Rock outcrop complex, 10 to 40 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr6j
*Elevation:* 4,000 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 45 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Rockoa, moist, and similar soils:* 40 percent
*Hickok and similar soils:* 30 percent
*Minor components:* 30 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Rockoa, Moist

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from sandstone

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 2 inches:* gravelly fine sandy loam
*E - 2 to 10 inches:* gravelly fine sandy loam
*Bt/E - 10 to 16 inches:* very gravelly clay loam
*Bt - 16 to 30 inches:* very gravelly clay loam
*BC - 30 to 40 inches:* extremely gravelly sandy clay loam
*C - 40 to 60 inches:* extremely gravelly sandy loam

#### Properties and qualities

*Slope:* 10 to 40 percent
*Percent of area covered with surface fragments:* 0.0 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None

*Calcium carbonate, maximum in profile:* 3 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.5
*Available water storage in profile:* Low (about 4.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Hickok

### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Residuum weathered from sandstone

### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 3 inches:* loam
*E - 3 to 11 inches:* very fine sandy loam
*Bt/E - 11 to 14 inches:* loam
*Bt - 14 to 28 inches:* clay loam
*C - 28 to 60 inches:* loam

### Properties and qualities

*Slope:* 10 to 40 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 10 percent
*Salinity, maximum in profile:* Nonsaline (0.1 to 1.5 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.4
*Available water storage in profile:* High (about 10.8 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* C
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Minor Components**

**Rock outcrop, sandstone**
*Percent of map unit:* 15 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Shoulder, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Convex, linear
*Across-slope shape:* Convex, linear
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Danjay**
*Percent of map unit:* 8 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope, shoulder
*Landform position (three-dimensional):* Mountaintop, mountainflank
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Sandy (North) (R062XA009SD)
*Other vegetative classification:* Not suited (G062XY000SD), Warm Slopes (062XY044SD)
*Hydric soil rating:* No

**Vanocker**
*Percent of map unit:* 7 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0584E—Vanocker-Citadel complex, 10 to 40 percent slopes

**Map Unit Setting**
*National map unit symbol:* 2kr7d
*Elevation:* 4,000 to 6,200 feet
*Mean annual precipitation:* 20 to 30 inches
*Mean annual air temperature:* 37 to 46 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**
*Vanocker and similar soils:* 55 percent
*Citadel and similar soils:* 25 percent
*Minor components:* 20 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Vanocker

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Upper third of mountainflank, center third of mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from limestone, sandstone, and shale

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*AE - 1 to 3 inches:* loam
*Bt - 3 to 10 inches:* channery sandy clay loam
*Bk1 - 10 to 27 inches:* very channery clay loam
*Bk2 - 27 to 58 inches:* extremely channery loam
*R - 58 to 80 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 10 to 40 percent
*Depth to restrictive feature:* 40 to 80 inches to lithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Low to high (0.00 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 79 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 4.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

### Description of Citadel

#### Setting

*Landform:* Mountain slopes, mountain valleys
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear
*Across-slope shape:* Linear

*Parent material:* Local alluvium and/or colluvium and/or residuum weathered from limestone, sandstone, and shale

**Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material
*A - 2 to 3 inches:* silt loam
*E - 3 to 8 inches:* silt loam
*Bt/E - 8 to 14 inches:* silty clay loam
*Bt1 - 14 to 22 inches:* silty clay
*Bt2 - 22 to 30 inches:* silty clay loam
*Btk - 30 to 35 inches:* clay loam
*Bk - 35 to 80 inches:* silt loam

**Properties and qualities**

*Slope:* 10 to 40 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.02 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 20 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 9.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* C
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Minor Components

**Sawdust, moist**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Upper third of mountainflank, center third of mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Thin Upland (North) (R062XA012SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rock outcrop, limestone**

*Percent of map unit:* 4 percent
*Landform:* Mountain slopes

*Landform position (two-dimensional):* Shoulder, summit, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear, convex
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Hickok**

*Percent of map unit:* 4 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rockerville, moist**

*Percent of map unit:* 4 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Shallow Loamy (North) 22 - 30 Inch PZ (R062XA024SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rockoa, moist**

*Percent of map unit:* 3 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0584F—Vanocker-Citadel complex, 20 to 60 percent slopes

**Map Unit Setting**

*National map unit symbol:* 2kr7f
*Elevation:* 4,000 to 6,200 feet
*Mean annual precipitation:* 21 to 30 inches
*Mean annual air temperature:* 37 to 46 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

**Map Unit Composition**

*Vanocker and similar soils:* 50 percent

*Citadel and similar soils:* 20 percent
*Minor components:* 30 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Vanocker

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Upper third of mountainflank, center third of mountainflank
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from limestone, sandstone, and shale

#### Typical profile

*Oi - 0 to 1 inches:* slightly decomposed plant material
*AE - 1 to 3 inches:* loam
*Bt - 3 to 10 inches:* channery sandy clay loam
*Bk1 - 10 to 27 inches:* very channery clay loam
*Bk2 - 27 to 58 inches:* extremely channery loam
*R - 58 to 80 inches:* unweathered bedrock

#### Properties and qualities

*Slope:* 20 to 60 percent
*Depth to restrictive feature:* 40 to 80 inches to lithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Low to high (0.00 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 79 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 4.3 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD), Ponderosa Pine - Little Bluestem (null_2)
*Hydric soil rating:* No

### Description of Citadel

#### Setting

*Landform:* Mountain slopes

*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Parent material:* Local alluvium and/or colluvium and/or residuum weathered from limestone, sandstone, and shale

**Typical profile**

*Oi - 0 to 2 inches:* slightly decomposed plant material
*A - 2 to 3 inches:* silt loam
*E - 3 to 8 inches:* silt loam
*Bt/E - 8 to 14 inches:* silty clay loam
*Bt1 - 14 to 22 inches:* silty clay
*Bt2 - 22 to 30 inches:* silty clay loam
*Btk - 30 to 35 inches:* clay loam
*Bk - 35 to 80 inches:* silt loam

**Properties and qualities**

*Slope:* 20 to 50 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.02 to 0.57 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 20 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* High (about 9.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* C
*Other vegetative classification:* Not suited (G062XY000SD), Ponderosa Pine - Little Bluestem (null_2)
*Hydric soil rating:* No

## Minor Components

**Sawdust, moist**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Upper third of mountainflank, center third of mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear

*Ecological site:* Thin Upland (North) (R062XA012SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Cordeston**

*Percent of map unit:* 5 percent
*Landform:* Terraces, valleys
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Mountainbase, tread
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Ecological site:* Valley Loam Cordeston (R062XY043SD)
*Other vegetative classification:* Loam (G062XY100SD)
*Hydric soil rating:* No

**Rock outcrop, limestone**

*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear, convex
*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Mccooley**

*Percent of map unit:* 4 percent
*Landform:* Hills, mountain slopes
*Landform position (two-dimensional):* Backslope
*Landform position (three-dimensional):* Mountainflank, side slope
*Down-slope shape:* Linear
*Across-slope shape:* Convex, linear
*Other vegetative classification:* Not suited (G062XY000SD), Ponderosa-Idaho fescue (null_4)
*Hydric soil rating:* No

**Hickok**

*Percent of map unit:* 3 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, footslope
*Landform position (three-dimensional):* Mountainflank
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Tollflat**

*Percent of map unit:* 3 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave

*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Maitland, silt loam**

*Percent of map unit:* 3 percent
*Landform:* Mountain slopes, valley sides
*Landform position (two-dimensional):* Footslope, backslope
*Landform position (three-dimensional):* Mountainbase, lower third of mountainflank
*Down-slope shape:* Concave, linear
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rockerville, moist**

*Percent of map unit:* 2 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Shallow Loamy (North) 22 - 30 Inch PZ (R062XA024SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Q0589G—Vanocker-Sawdust, moist-Rock outcrop complex, 40 to 80 percent slopes

### Map Unit Setting

*National map unit symbol:* 2kr7p
*Elevation:* 3,600 to 6,200 feet
*Mean annual precipitation:* 19 to 30 inches
*Mean annual air temperature:* 37 to 46 degrees F
*Frost-free period:* 80 to 120 days
*Farmland classification:* Not prime farmland

### Map Unit Composition

*Vanocker and similar soils:* 40 percent
*Sawdust, moist, and similar soils:* 30 percent
*Rock outcrop, limestone:* 15 percent
*Minor components:* 15 percent
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Vanocker

#### Setting

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder
*Landform position (three-dimensional):* Mountainflank

*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from limestone, sandstone, and shale

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*AE - 1 to 3 inches:* loam
*Bt - 3 to 10 inches:* channery sandy clay loam
*Bk1 - 10 to 27 inches:* very channery clay loam
*Bk2 - 27 to 58 inches:* extremely channery loam
*R - 58 to 80 inches:* unweathered bedrock

**Properties and qualities**

*Slope:* 40 to 75 percent
*Depth to restrictive feature:* 40 to 80 inches to lithic bedrock
*Natural drainage class:* Well drained
*Runoff class:* High
*Capacity of the most limiting layer to transmit water (Ksat):* Low to high (0.00 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 79 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 4.3 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Sawdust, Moist

**Setting**

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Upper third of mountainflank, center third of mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Parent material:* Colluvium and/or residuum weathered from limestone, sandstone, and shale

**Typical profile**

*Oi - 0 to 1 inches:* slightly decomposed plant material
*A - 1 to 5 inches:* gravelly silt loam
*AB - 5 to 15 inches:* gravelly silt loam
*Bk - 15 to 61 inches:* very gravelly silt loam

*2BCk - 61 to 79 inches:* very gravelly loam

**Properties and qualities**

*Slope:* 40 to 80 percent
*Depth to restrictive feature:* More than 80 inches
*Natural drainage class:* Well drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately high to high (0.20 to 1.98 in/hr)
*Depth to water table:* More than 80 inches
*Frequency of flooding:* None
*Frequency of ponding:* None
*Calcium carbonate, maximum in profile:* 25 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
*Sodium adsorption ratio, maximum in profile:* 0.2
*Available water storage in profile:* Low (about 4.9 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 7e
*Hydrologic Soil Group:* B
*Ecological site:* Thin Upland (North) (R062XA012SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Description of Rock Outcrop, Limestone

**Setting**

*Landform:* Mountain slopes
*Landform position (two-dimensional):* Backslope, shoulder, summit
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Parent material:* Limestone

**Typical profile**

*R - 0 to 80 inches:* unweathered bedrock

**Properties and qualities**

*Slope:* 20 to 999 percent
*Depth to restrictive feature:* 0 to 1 inches to lithic bedrock
*Natural drainage class:* Excessively drained
*Runoff class:* Very high
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to high (0.01 to 5.95 in/hr)
*Calcium carbonate, maximum in profile:* 85 percent
*Gypsum, maximum in profile:* 1 percent
*Salinity, maximum in profile:* Nonsaline (0.0 to 0.6 mmhos/cm)
*Available water storage in profile:* Very low (about 0.0 inches)

**Interpretive groups**

*Land capability classification (irrigated):* None specified
*Land capability classification (nonirrigated):* 8s
*Hydrologic Soil Group:* D

*Ecological site:* Non-site (R062XY999SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Minor Components**

**Rapidcreek, rarely flooded**
*Percent of map unit:* 5 percent
*Landform:* Stream terraces, flood plains, terraces
*Landform position (two-dimensional):* Toeslope, footslope
*Landform position (three-dimensional):* Tread
*Down-slope shape:* Linear
*Across-slope shape:* Linear
*Ecological site:* Loamy Overflow (North) (R062XA020SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Rockerville, moist**
*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Summit, backslope
*Landform position (three-dimensional):* Mountainflank, mountaintop
*Down-slope shape:* Linear, convex
*Across-slope shape:* Linear
*Ecological site:* Shallow Loamy (North) 22 - 30 Inch PZ (R062XA024SD)
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

**Citadel**
*Percent of map unit:* 5 percent
*Landform:* Mountain slopes
*Landform position (two-dimensional):* Footslope
*Landform position (three-dimensional):* Lower third of mountainflank, mountainbase
*Down-slope shape:* Linear, concave
*Across-slope shape:* Linear
*Other vegetative classification:* Not suited (G062XY000SD)
*Hydric soil rating:* No

## Data Source Information

Soil Survey Area: Custer and Pennington Counties Area, Black Hills Parts, South Dakota
Survey Area Data: Version 5, Sep 21, 2015

Soil Survey Area: Lawrence County, South Dakota
Survey Area Data: Version 17, Sep 21, 2015